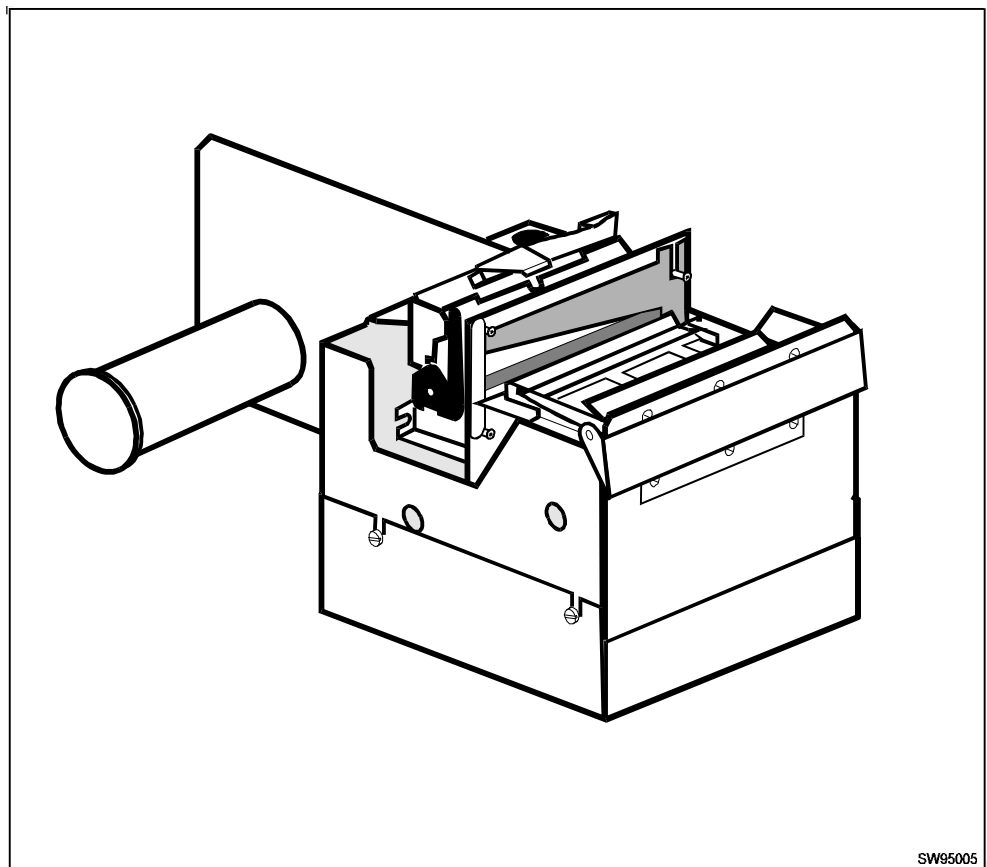


TTP 5000 Kiosk Printers

Installation Manual



Related manuals

TTP 5000 Kiosk Printers, Service Manual

(Part No. SWC-803)

The Service Manuals contains information such as:

- Functional description
- Maintenance instructions
- Spare parts list
- Logic diagrams

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This is a publication of SWECOIN AB
Box 132, S-191 22 Sollentuna, Sweden

Phone int.+46 8 92 00 80
nat. 08 92 00 80

Fax int.+46 8 96 50 54
nat. 08 96 50 54

BBS int.+46 8 92 00 88
nat. 08 92 00 88

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1 INTRODUCTION

1.1 About this manual

This manual contains the information required for installation and operation of the printers from a host computer, for example, a PC. From this edition, the manual title has been changed to "Installation".

The first chapter summarizes the applicable hardware/software interface commands supported by the printer processor firmware. The summary is followed by chapters describing the command syntax.

Other chapters of the manual contain information about the printer error codes, communications parameters, test print functions and specifications of the serial and parallel printer interfaces.

1.2 Updating

As, from time to time, printer functions and features may be added or amended, this manual will be updated. No automatic distribution of new editions is, however, planned. Registered manual owners (see registration form at the end of the manual) will be kept informed about new editions, product changes, etc. through our bulletin service. Updated manuals can be ordered by fax or phone.

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SUMMARY OF CONTROL CODES & ESCAPE SEQUENCES

2.1

Character and bit-image mode commands

Command	Hex.	Decimal	Function	Page
LF	0A	10	Line feed	7
CR	0D	13	Carriage return	7
FF	0C	12	Form feed	7
RS	1E	30	Cut and eject paper	7
SI	0F	15	Reset from double width	8
SO	0E	14	Set double width print	8
ENQ	05	5	Clear presenter	8
CAN	18	24	Clear input buffer	8
ESC @	1B 40	27 64	Reset, initialize	8
ESC C n1 n2	1B 43 n1 n2	27 67 n1 n2	Set page length	9
ESC ENQ 1	1B 05 01	27 5 1	Status inquiry	9
ESC ENQ 2	1B 05 02	27 5 2	Status inquiry, paper near end	9
ESC FF n	1B 0C n	27 12 n	Eject only (after cut)	9
ESC f n	1B 66 n	27 102 n	Presenter motor drive	10
ESC J n	1B 4A n	27 74 n	Paper advance	10
ESC l n	1B 6C n	27 108 n	Line feeds before cut	10
ESC M n1 n2	1B 4Dn1 n2	27 77 n1 n2	Top-of-form detection	21
ESC p nnnn	1B 70 nnnn	27 112 nnnn	Custom logotype print	10
ESC q n	1B 71 n	27 113 n	Burn time adjustment	11
ESC R n	1B 52 n	27 82 n	Int'l character select	11
ESC RS	1B 1E	27 30	Cut only, no eject	11
ESC S n1 n2	1B 53 n1 n2	27 83 n1 n2	Select graphics mode	12
ESC SI	1B 0F	27 15	Reset from double height	12
ESC SO	1B 0E	27 14	Set double height print	12
ESC T n	1B 54 n	27 84 n	Reversed print on/off	12

2.2

Label- and other top-of-form-oriented commands

Command	Hex.	Decimal	Function	Page
ESC A n1n2n3	1B 41 n1n2n3	27 65 n1n2n3	Set document length	13
ESC BC b1	1B 42 43 b11	27 66 67 b1	Clear bar code area	13
ESC BS b1...b11	1B 42 53 b1...b11	27 66 83 b1...b11	Reset bar code block	14
ESC BW b1..NUL	1B 42 57 b1...00	27 66 87 b1...0	State bar code data	15
ESC DC d1	1B 44 43 d1	27 68 67 d1	Clear comment area	16
ESC DS d1...d7	1B 44 53 d1...d7	27 68 83 d1...d7	Reserve comment block	16
ESC DW d1..NUL	1B 44 57 d1...00	27 68 87 d1...0	Comment block data	18
ESC E	1B 45	27 69	Clear all label areas	18
ESC GC g1	1B 47 43 g1	27 71 67 g1	Clear graphics area	18
ESC GS g1...g8	1B 47 53 g1...g8	27 71 83 g1...g8	Reserve graphics area	19
ESC GW g1...gn	1B 47 57 g1...gn	27 71 87 g1...gn	Graphics data	19
ESC LC l1	1B 4C 43 l1	27 76 67 l1	Clear ruler line area	20
ESC LS l1...l10	1B 4C 43 l1...l10	27 76 83 l1...l10	Ruler line data	20
ESC P n1	1B 50 n1	27 80 n1	Print document (label)	21
ESC X n1 n2	1B 58 n1 n2	27 88 n1 n2	Sense top-of-form position	21
ESC x n1 n2	1B 78 n1 n2	27 120 n1 n2	Set internal top-of-form clock	22
ESC Y n1 n2	1B 59 n1 n2	27 89 n1 n2	Set start position	22
ESC Z	1B 5A	27 90	Go to next top-of-form	22

LF**Line feed****(0AH), (10) decimal**

Prints the data in the input buffer in the current mode and spaces as specified by the line spacing setting.

The command is ignored if immediately preceded by a CR.

CR**Carriage return****(0DH), (13) decimal**

Prints the data in the input buffer in the current mode and spaces as specified by the line spacing setting.

If the input buffer contains only line space data, line feed is effected. If the buffer contains no data the printer does not react to this command.

FF**Form feed****(0CH), (12) decimal**

Prints data from the buffer and feeds the paper to the top of the next page as identified by the page length definition set by ESC+C+n1+n2.

The TTP printer is placed in continuous print mode when turned on or Reset, (page length 0, print lines 0 and skip lines 0).

RS**Record separate****(1EH), (30) decimal**

Effects paper cut-off and default length eject via the presenter module.

SI**Shift in****(0FH), (15) decimal**

Resets from double-width mode printing, set by SO, to normal character mode. Valid only in double-width mode.

SO**Shift out****(0EH), (14) decimal**

Sets double-width mode. The characters are printed in double width.

Normal width and double-width characters can be combined on the same print line.

Double-width mode can be combined with double-height mode for printing of "quadruple" characters.

ENQ**Clear presenter and report status****(05H), (5) decimal**

Used to clear paper path in the presenter, for example, ejecting a document not removed from previous print/cut/eject operation. Response signal depending on DIP switch setting.

CAN**Cancel****(18H), (24) decimal**

Cancels data in the input buffer, stored before the CAN command is issued. Command modes issued on the same line as the CAN command are not canceled.

ESC+ @**Reset****(1BH)+(40H), (27)+(64) decimal**

Terminates processing and initializes the control board. The control board is reset to default values, same as at power on.

ESC+C+n1+n2**Set page length****(1BH)+(43H)+n1+n2, (27)+(67)+n1+n2 decimal**

Sets the page length valid in character print mode.

A page consists of a printable area and a skip area at the bottom of the page. The printable area = the page length n1 minus the skip area n2.

The command is ignored when n1 is smaller than or equal to n2.

The printer is put into continuous print mode if n1 = 0.

n1 and n2 must be 1-byte hexadecimal or decimal numbers

The printer is placed in continuous print mode when turned on or reset.

ESC + ENQ + 1**Status inquiry****(1BH)+(05H)+(01H), (27)+(5)+(1) decimal**

Status inquiry. Results in response ACK if all sensors are clear, NAK + code if one or more sensors report fault condition. See *Chapter 5, Error Codes*.

For "Paper near end" sensor, refer to separate Status inquiry (ESC ENQ 2)

Compare with ENQ command which also clears the Presenter

ESC + ENQ + 2**Status inquiry, paper near end****(1BH)+(05H)+(02H), (27)+(5)+(2) decimal**

Status inquiry, paper near end (paper low). Response is returned from the printer in a 1-byte format as follows:

Value = (00H) indicates "No paper"

Value = (01H) indicates "Paper present" at the sensor position

Compare with ENQ command which also clears the Presenter

ESC + FF + n**Eject only****(1BH)+(0CH)+n, (27)+(12)+n decimal**

Usually follows an ESC + RS command. ESC+FF+n effects eject, through the presenter module, of a previously cut-off document. n represents the number of eject steps, each of approximately 2 mm length. n maximum = 255.

The primary use is for determining if a document is to be fully or partially ejected (partly retained in the presenter module) or to partially eject a long document during ongoing processing, also without preceding Cut.

ESC + f + n**Presenter motor drive selection****(1BH)+(66H)+n, (27)+(102)+n decimal**

- n = 0 Default value. Presenter motor catches leading paper edge, loops the paper for ejection after completed print and cut-off.
- n = 1 Presenter sensor is ignored, the leading paper edge is fed straight through the presenter. This function can be turned on/off at any time during an ongoing operation.

ESC + J + n**Paper advance feed****(1BH)+(4AH)+n, (27)+(74)+n decimal**

The value n represents the number of dot lines (at 0.125 mm) at which the paper is to be transported forwards. Maximum value for n = 255, equal to approximately 32 mm.

(Reserved)

ESC + l + n**Line feeds before cut****(1BH)+(6CH)+n, (27)+(108)+n decimal**

Sets number of line feeds to be executed before a cut-off.
Valid only in combination with the RS command.

ESC + p + nnnn**Logotype print****(1BH)+(70H)+nnnn, (27)+(112)nnnn decimal**

Effects print of customized logotype stored in EPROM.

nnnn Represents a four-digit number assigned to customized logotype.

(1BH)+(71H)+n, (27)+(113)+n decimal

Parameter n represents the length of the thermal head resistor's ON time. This command adjusts the burn time to get the optimal print contrast for the paper quality that is used.

n = 5 Default value

n = 1—15 Adjustment range.

Note: Higher values than 5 affect the thermal head life expectancy negatively.

(1BH)+(52H)+n, (27)+(82)+n decimal

Selects one of eight international character sets specified by n. Legitimate n values are listed below, Invalid values are ignored. At power ON, the value 1 is assumed.

n = 1 USA

n = 2 Germany

n = 3 England

n = 4 France

n = 5 Spain

n = 6 Italy

n = 7 Sweden

n = 8 Denmark

(1BH) + (1EH), (27) + (30) decimal

Effects paper cut-off only, no eject function even when such feature is present.

ESC+S+n1+n2**Select graphics mode**

(1BH)+(53H)+ n1+n2, (27)+(83)+n1+n2 decimal

Sets Bit Image Graphics Mode.

n1 and n2 High and low order byte. Determine the number of dot lines.

n1 and n2 must be 1-byte hexadecimal or decimal numbers

The printer is put in character mode if n1 = n2 = 0

Of commands issued before the ESC+S, only Reversed Printing (ESC+T+n) remains valid after execution of the ESC+S command.

In bit-image graphics mode, all character codes are disabled and processed as bit-image data.

Data overflowing the specified print area is treated as characters. If less data than specified is received, the printer may enter into a wait state, waiting for further data. It may handle subsequent character code or non-bit-image data as bit-image data. The host computer must supply as many data bytes as the byte count specified.

ESC + SI**Reset double-height mode**

(1BH)+(0FH), (27)+(15) decimal

Resets the printer from double-height mode to normal mode (double-height mode was set with the ESC+SO command). Valid only in double-height mode.

ESC + SO**Set double-height mode**

(1BH)+(0EH), (27)+(14) decimal

Places the printer in double-height mode, printing double-height characters.

A print line cannot contain both normal-height and double-height characters, but double height can be combined with double width for "quadruple" characters.

ESC + T + n**Set reversed printing**

(1BH)+(54H)+n, (27)+(84)+n decimal

Selects normal or reversed print mode.

n = 0 Gives normal print (black on white)

n = 1 Gives reversed print (white on black)

This section discusses software commands used to print documents using functions such as label printing, bar code printing, enlarged character printing (comment block), landscape printing, graphics, ruler line and related functions.

ESC+A+n1+n2+n3	Set document (label) length
-----------------------	------------------------------------

(1BH)+(41H)+n1+n2+n3, (27)+(65)+n1+n2+n3 decimal

Determines the length of the document (label) to be printed.

The printer control board has approximately 50 K bytes of page memory available for data storage. With this page memory, the maximum available field length (lmax.) is 600 dot lines, equal to approximately 75 mm paper length in the 80 mm wide mechanism.

- n1 Specifies block No. (0—15). The total available document length can be divided into a total of 16 blocks. The blocks must be defined sequentially, starting at No. 0. Any n1 value other than 0—15 is ignored.
- n2n3 Specifies effective document (label) length.
 n2 = higher order, n3 = lower order
 n2 and n3 are 1-byte hexadecimal or decimal numbers. The value specified by n2 and n3 must not exceed the maximum effective length specified above.

This command may be omitted if the block to be printed is positioned in block No. 0 only.

ESC + BC + b1	Clear bar code area
----------------------	----------------------------

(1BH)+"BC"+b1, (27)+"BC"+b1 decimal

This command clears the bar code block area reserved by the command ESC + BS.

- b1 Specifies the bar code block No. (0—15). The blocks may be specified in any order but b1 values other than 0—15 are ignored.

(1BH)+"BS"+b1+b2+...+b11, (27)+"BS"+b1+b2+...+b11 decimal

Reserves a document block identified by the ESC + A command as a bar code area. The command also identifies the type, number of digits and the configuration of bars to be placed in the bar code area.

b1 Specifies the bar code block No. (0—15). The blocks may be specified in any order. Any value other than 0—15 is ignored.

b2b3 Specifies the X coordinate of the bar code block position. Parameter b2 is the higher order and b3 the lower order byte).

Parameters b2 and b3 must be 1-byte hexadecimal or decimal numbers. The value specified by b2b3 must not exceed the total dot count that can be handled by the printer mechanism (56 bytes, 72 bytes and 104 bytes for the 60, 80 and 112 mm mechanisms respectively).

b4b5 Specifies the Y coordinate of the bar code block position. Parameter b4 is the higher order and b5 the lower order byte.

Parameters b4 and b5 must be 1-byte hexadecimal or decimal numbers. The value specified by b4b5 must not exceed the effective length specified in the ESC+ A command.

b6 Specifies the number of bar code digits.

b7b8 Specifies the height of the bars. Parameters b7 and b8 must be 1-byte hexadecimal or decimal numbers. The value specified by b7 and b8 must not exceed the effective length specified in the ESC + A command.

b9 Specifies type of bar code. The following bar code types are supported.

b9 = 0, EAN 13 and UPC-A

b9 = 1, EAN 8

b9 = 6, Code 39

b9 = 8, Code 128

b9 = 9, EAN 128

Note:

For EAN codes, the printer calculates the necessary check digit.

For Code 39, the start and stop character "" is generated by the printer.*

For UPC-A, use b9 value = 0 and insert a prefix "0" before the 11-digit data string.

b10 Specifies the thickness of the narrow bar.

0 = 1 dot 3 = not applicable 6 = 7 dots
 1 = 2 dots 4 = 5 dots 7 = 8 dots
 2 = 3 dots 5 = 6 dots

All other values are invalid.

b11 Specifies the ratio of wide bar to narrow bar.

b11 value	Narrow bar	Wide bar
0	1	1,5
1	1	2
2	1	2,5 (may be difficult to read)
3	1	3
4	1	3.5

The lower three bits of the b11 byte are significant (some ratio values may not be processed properly). The above values serve only as guidance values.

ESC+BW+b1+b2...+NUL

State bar code data

(1BH)+"BW"+b1+b2..., (27)+"BW"+b1+b2 decimal

Fills the bar code area reserved by the ESC+BS command with bar code data to be printed.

b1 Specifies the block (0—15). Blocks can be specified in any order but other values than 0—15 are ignored.

b2... Specifies bar code data bytes.

NUL Must be placed at the end of the bar code data.

Any invalid bar code character terminates the command.

Print-out is effected by an ESC + P command.

(1BH)+"DC"+d1, (27)+"DC"+d1 decimal

Clears the comment block area reserved by the ESC+DS command.

d1 Specifies the comment block (0—15) to be cleared. Comment blocks can be specified in any sequence but other values than 0—15 are ignored.

Of command codes specified before this command, only ESC+T+n (reversed printing) remains in effect after execution of ESC+DC+d1.

(1BH)+"DS"+d1+d2..., (27)+"DS"+d1+d2... decimal

Reserves a comment block area within a document length defined by the ESC+A command. The command also specifies the type, orientation and number of comment columns to be placed in the comment block area.

d1 Specifies comment block number (0—15). Comment blocks can be specified in any sequence but other values than 0—15 are ignored.

d2d3 Specifies the X coordinate of the comment block position, (d2 is the higher and d3 the lower order byte). Parameters d2 and d3 must be 1-byte hexadecimal or decimal numbers. The value specified by d2d3 must not exceed the total dot count that the selected printer mechanism can handle, 56 bytes, 72 bytes and 104 bytes for the 60 mm, 80 mm and 112 mm mechanisms respectively.

d4d5 Specifies the Y coordinate of the comment block position, (d4 is the higher and d5 the lower order byte) and must be expressed in 1-byte hexadecimal or decimal numbers. The value specified in d4d5 must not exceed the effective length specified in the ESC+A command.

d6 Specifies the number of comment columns.

d7 Specifies the size and orientation of comment character

Bit	Character type
7	Orientation, 0 = Portrait, 1 = Landscape
6	Not used
5,4,3	Determines the character height. 8 different heights (0 - 7) can be selected.
2,1,0	Determine the character width. 8 different widths (0 - 7) can be selected

No more than one orientation and one type of character can appear in one comment block.

Use the following formula to calculate the value of d7:

$$d7 = R + (H * 8) + W$$

where **R** represents the orientation,

0 = portrait mode

128 = landscape mode.

H represents character height, numbers **0—7**

W represents character width, numbers **0—7**

Example: Assume landscape mode, character height = 6, character width = 4

$$d7 = 128 + (5 * 8) + 3 = 171$$

This can be written in Basic as:

```
REM Select Landscape mode
```

```
R=128
```

```
REM Select character height 6
```

```
H=5 (height 5 is the 6th alternative of alternatives 0—7)
```

```
REM Select character width 4
```

```
W=3 (width 3 is the 4th alternative of alternatives 0—7)
```

```
REM Convert to ASCII characters and print
```

```
Print CHR$(R+(H*8)+W)
```

Smallest character size is 12 dots high and 8 dots wide. This is represented by H = 0, W = 0.

Largest character size is 96 dots high, (8*12) and 64 dots wide (8*8).

Any combination of H and W are permissible although a number of combinations are impractical. Resolution in both directions is 8 dots/mm.

Coordinates d2d3 and d4d5, specifying the X and Y location of a comment block, always refer to the top left-hand corner of the first character in the block both in portrait and in landscape mode.

ESC+DW+d1+d2...+NUL**State comment block data****(1BH)+"DW"+d1+d2...+NUL, (27)+"DW"+d1+d2...+NUL decimal**

Fills the comment block area reserved by the ESC+DS command with comment data.

d1 Specifies the comment block number (0—15) that can be specified in any sequence. Values other than 0—15 are ignored

d2... Specifies one or more comment data bytes

NUL Must be placed at the end of the comment data.

Any invalid command character terminates the ESC+DW command.

Of commands specified before ESC+DW, only ESC+T+n (reversed printing) remains in effect after execution of the ESC+DW command.

Print-out is effected by an ESC + P command.

ESC + E**Clear all label areas****(1BH)+(45H), (27)+(69) decimal**

Clears all label areas.

Of command codes specified before this command, only ESC+T+n (reversed printing), remains in effect after execution of ESC+E.

ESC+GC+g1**Clear graphics area****(1BH)+"GC"+g1, (27)+"GC"+g1 decimal**

Clears graphics block area reserved by ESC+GS command.

g1 Specifies graphics block (0—15) in any sequence. Values other than 0—15 are ignored.

Of command codes specified before this command, only ESC+T+ (reversed printing) remains in effect after execution of ESC+GC.

(1BH)+"GS"+g1+g2+...+g8, (27)+"GS"+g1+g2+...+g8 decimal

Reserves a block area defined in an ESC+A command as a graphics block area. The command also defines the size of the graphics block.

- g1 Specifies graphics block number (0—15). Graphics blocks may be specified in any order but values other than 0—15 are ignored.
- g2g3 Specifies X coordinate of the graphics block position. Parameter g2 is the higher-order and g3 the lower-order byte. Parameters g2 and g3 must be 1-byte hexadecimal or decimal numbers and the value specified must not exceed the total dot count that can be handled by the printer mechanism, (56, 72 or 104 bytes for 60, 80 and 112 mm paper widths respectively).
- g4g5 Specifies the Y coordinate of the graphics block position. Parameter g4 is the higher-order and g5 the lower-order byte and they must be 1-byte hexadecimal or decimal numbers. The value specified by g4g5 must not exceed the effective length specified in the ESC + A command.
- g6 Specifies the number of bytes in the X-direction.
 - Max. 56 bytes for the 60 mm mechanism
 - Max. 72 bytes for the 80 mm mechanism
 - Max. 104 bytes for the 112 mm mechanism
- g7g8 Specifies the number of lines in the Y direction, (g7 is the higher-order and g8 the lower-order byte). Parameter g7g8 must be 1-byte hexadecimal or decimal numbers. The value specified by g7g8 must not exceed the effective length specified by ESC+A.

(1BH)+"GW"+g1+g2+...+gn, (27)+"GW"+g1+g2+...+gn decimal

Fills the graphics block area reserved by the ESC+GS command with graphics data.

- g1 Specifies graphics block number (0—15) in any order. Other g1 values than 0—15 are ignored.
- g2... Specifies graphics data bytes. Number of data bytes g2...gn: (number of bytes in X direction) multiplied by number of lines in Y direction.

All character and control codes are invalid, the printer will process any code as bit image data. Any data overflowing the specified graphics block is ignored.

If less data than specified in this command is received, the printer may either enter into a wait state, waiting for further data or it may handle subsequent character codes or non-bit-image data as bit image data. The host computer must supply as many data bits as the data bit count specified in this command.

Of command codes specified before this command, only ESC+T+n (reversed printing) remains in effect after execution of the ESC+GW command.

Print-out is effected by an ESC + P command.

(1BH)+"LC"+I1, (27)+"LC"+I1 decimal

Clears ruler line area

I1 Specifies ruler line No, (1—15) in any order. Values other than 0—15 are ignored.

Of command codes specified before this command, only ESC+T+n remains valid after execution of this command.

(1BH)+"LS"+I1+I2...+I10, (27)+"LS"+I1+I2+...+I10 decimal

Draws a horizontal or vertical ruler line in the block area defined by the ESC + A command. The command also defines the thickness of the ruler line.

I1 Specifies the ruler line number (0—15) in any order. Values other than 0—15 are ignored.

I2I3 Specifies the X coordinate of the ruler line starting point (I2 is the high-order and I3 the low-order byte). I2 and I3 must be 1-byte hexadecimal or decimal numbers. The value specified by I2 and I3 must not exceed the total dot count that can be handled by the printer.

I4I5 Specifies the Y coordinate of ruler line starting point (I4 is the high-order and I5 the low-order byte). I4 and I5 must be 1-byte hexadecimal or decimal numbers and the value specified by I4I5 must not exceed the effective length specified in the ESC + A command.

I6I7 Specifies the X coordinate of the end of the ruler line (I6 is the high-order and I7 the low-order byte). I6 and I7 must be 1-byte hexadecimal or decimal numbers and the value specified by I6I7 must not exceed the total dot count that can be handled by the selected printer mechanism.

I8I9 Specifies the Y coordinate of the end of the ruler line (I8 is the high-order and I9 the low-order byte). I8 and I9 must be 1-byte hexadecimal or decimal numbers. The value specified by I8I9 must not exceed the effective length specified in the ESC + A command.

I10 Specifies the thickness of the ruler line:

0 = 1 dot	3 = 4 dots	6 = 7 dots
1 = 2 dots	4 = 5 dots	7 = 8 dots
2 = 3 dots	5 = 6 dots	

The lower 3 bits of I10 byte are significant.

I2I3 must be smaller than I6I7.

I4I5 must be smaller than I8I9.

Any invalid parameter combination is ignored.

The printer cannot draw slanted lines

Of commands specified before the ESC + LS command, only ESC + T (reversed printing) remains in effect after execution of ESC + LS.

Print-out is effected by an ESC + P command.

ESC + M+n1+n2**Top-of-form detection**

(1BH)+(4DH)+n1+n2, (27)+(77)+n1+n2 decimal

Identifies maximum (n1) and minimum (n2) length respectively, expressed in dot lines at 0.125 mm, of Top-of-Form mark, (printed on the paper reverse side) to be used for identification of Top-of-Form for the next document.

Active transition is from "black" to "white".

n1 maximum valid value is 160 dot lines, (20 mm)

n1 minimum valid value is 15 dot lines, (1,8 mm)

n1 Default value = 30 dot lines at 0.125 mm

n2 Default value = 12 dot lines at 0.125 mm.

ESC + P + n1**Print document (label)**

(1BH)+(50H)+n1, (27)+(80)+n1 decimal

Prints document (label).

n1 Specifies document number (0—15) of the document (label) to be printed.

n1 value = <7FH> (or decimal <127>) specifies that all document (label) areas are to be printed (approximately 50 Kbytes of page memory).

Any n1 value other than those indicated here are ignored.

ESC + X + n1 + n2**Sense top-of-form position**

(1BH)+(58H)+n1+n2 (27)+(88)+n1+n2 decimal

Reports if a top-of-form position marker is sensed within the area specified by n1n2, starting at the current position.

n1n2 Specifies the area to be searched for position marker. n1 is the high-order and n2 the low-order byte. Parameter n1n2 must be 1-byte hexadecimal or decimal numbers.

The printer enters into an error mode if no position marker is found while it is feeding paper (searching for position marker) within the area specified in this command.

ESC + x + n1 + n2**Set internal counter at 256*n1+n2****(1BH)+(78H)+n1+n2, (27)+(120)+n1+n2 decimal**

Sets an internal counter at 256 *n1+n2 dot lines. The counter is decremented when a black mark (TOF-indication) is detected. At counter value 0 (zero), top-of-form is assumed, for example, for cut.

ESC + Y + n1 + n2**Set document (label) starting position****(1BH)+(59H)+n1+n2, (27)+(89)+n1+n2 decimal**

Defines the number of dot lines between the top of form position sensed by the mechanism paper sensor and the position at which the printing is to start. The printer advances the paper by the number of dot lines specified in this command before printing starts.

n1n2 Specifies the number of dot lines by which the paper is to be transported forwards before printing starts. n1 is the high-order and n2 the low-order byte. n1 and n2 must be 1-byte hexadecimal or decimal numbers.

The printer enters into an error mode if a paper empty condition occurs while it is feeding the paper as specified by n1n2 in this command.

The paper feed length n1n2 must be greater than or equal to the thickness (length in paper transport direction) of the Top-of-Form position marker. The printer will signal a Paper Empty condition if the paper feed length is smaller than the length of the paper positioning marker.

ESC + Z**Execute line feeds to next top-of-form****(1BH)+(5AH), (27)+(90) decimal**

Executes line feeds as identified by internal clock with ESC+x+n1+n2 minus such dot line feeds that have been effected after detection of black mark.

The printer systems are quipped with a number of sensors for the purpose of detecting various error conditions such as out-of-paper, previous printout not removed etc. In serial interface applications, the two software commands ENQ and ESC ENQ 1 can be used to get error condition responses from the printer.

Sending an ENQ (05H) *Clear Presenter and Report Status*, or an ESC ENQ 1(1BH 05H 01H) *Report Status Only* to the printer, results in the printer sending a status report to the host computer. This status report reflects the status of the available sensors in the printer system and identifies possible error conditions.

The table below shows the various conditions reported following the ENQ and ESC ENQ 1 commands to the printer.

Note: *The printers offer a choice between Reporting and Silent Modes via the control board DIP-switch No. 4. ON = ACK/NAK, OFF = Silent.*

Printer response	Status
ACK	Conditions OK
NAK + 01	Paper in presenter module a) ENQ. Attempt made to clear conditions had been made but failed. b) ESC ENQ. No attempt to clear has been made.
NAK + 02	Cutter not in home position
NAK + 03	Printer out of paper
NAK + 04	Print head lifted

The possible error conditions are reported in the above order and the first error condition detected is reported. This means that an ENQ or ESC/ENQ has to be sent until an ACK is received before the host computer can be certain that all error conditions have been cleared.

The ENQ and ESC ENQ functions do not wait for a reported error to be cleared. The operator has to determine and take the correct action, for example, replacing the paper roll.

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The figure below shows the control board SWC-492 mounted in the printer. This board has a 10-pole ribbon-cable-type serial interface connector J3 (also see *Chapter 9*). Other components that might be of interest are:

J1	Print head connector	J9	Presenter sensor connector
J2	Power supply connector	J10	Paper-low sensor (optional)
J3	Serial interface connector	J11	Print head-open sensor connector
J4	Stepper motor connector	J12	Paper feed button and lamp connector
J6	Cutter motor connector	SW1	DIP switches
J7	Presenter motor connector	U3	Firmware (printer program) PROM
J8	Paper end sensor connector		

Parallel interface is achieved by mounting the piggy-back board SWC-561 (not shown) on top of the control board (also see *Chapter 10*).

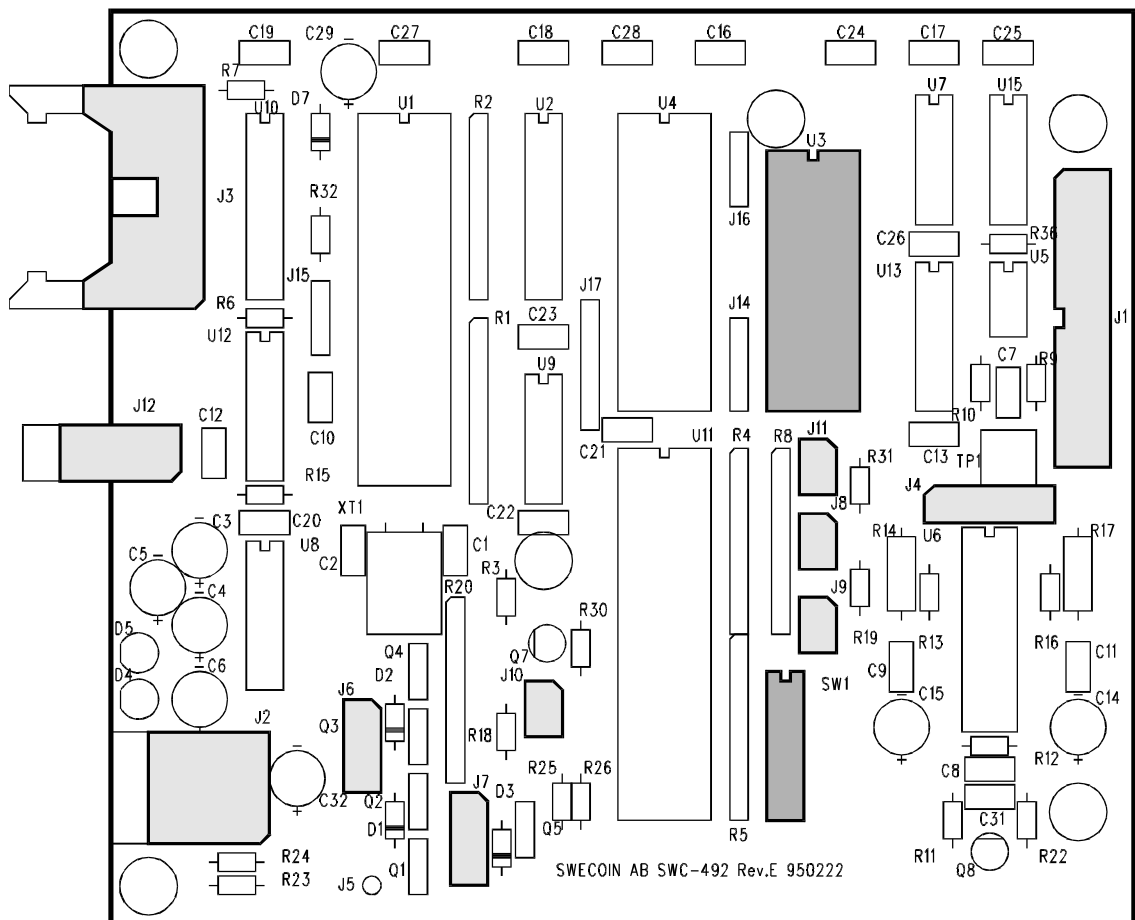


Figure 1. Control board SWC-492

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The printer control board has a DIP-switch module (SW1) with 8 switches. These are used to identify communications protocol and handshaking parameters as follows:

DIP switch	Function	Setting
1	Baud rate	OFF = 9600 ON = 19200
2	Handshaking	OFF = RTS/CTS ON = XON/XOFF
3	Reserved	
4	Error reporting	OFF = Silent ON = ACK/NAK + error code
5 and 6	Mechanism width	5 OFF, 6 OFF = 80 mm mechanism 5 ON, 6 OFF = 60 mm mechanism 5 OFF, 6 ON = 112 mm mechanism 5 ON, 6 ON = Not defined
7	Not used	
8	Not used	

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The following two types of test prints can be obtained:

- Self test off-line printout
- HEX dump on-line printout

The two printout alternatives described below apply to a printer having a paper feed button connected to connector J12 at the back of the printer.

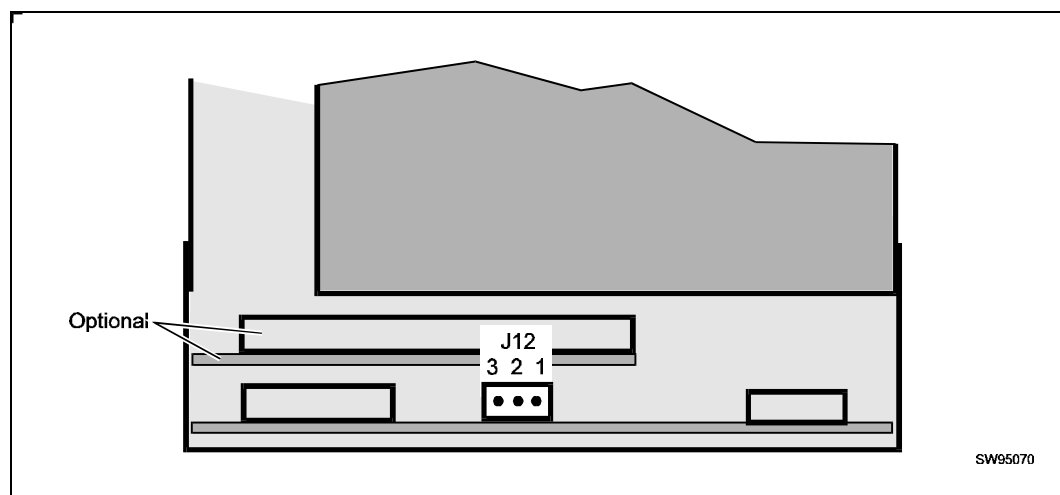


Figure 2. Position of connector J12 (rear view of the printer).

If there is no paper feed button installed (during maintenance for example), connect a jumper between pins 2 and 3 in connector J12 when you are instructed to press the paper feed button. Removing the jumper corresponds to releasing the button.

8.1

Self test off-line printout

1. Verify that the power is switched OFF.
2. Push the paper feed button and keep it depressed.
3. Switch the power ON and keep the paper feed button depressed for at least 5 seconds. This produces a printout showing the firmware program (PROM) version, DIP switch settings, number of dots in the printhead, burn time, maximum characters per line, and (repeatedly) all characters in the character generator.
4. Release the paper feed button to stop the printing. The printer cuts and ejects the document but remains in the self test mode. Renewed actuation of the paper feed button produces a demo test print out followed by cut and eject.
5. Exit the self test mode by switching the power OFF.

Note! — The printer cannot receive any data while in the self test off-line mode.

HEX dump, on-line printout

1. Verify that the power is switched OFF.
2. Lower the print head lever to **horizontal** position.
3. Depress the paper feed button and keep it depressed.
4. Power ON the printer and release the paper feed button.
5. Raise the print head release lever to **vertical** position. The printer is now in a HEX dump mode and all on-line communication is printed in both HEX format and ASCII character format. The HEX print mode is formatted for 60 mm wide paper and 16 characters print width irrespective of the paper width used in the printer. If the last line contains fewer than 16 characters, this line will not be printed until you execute the next step.
6. Depress the paper feed button temporarily. This ensures that the last transmitted characters become printed. The printer cuts the paper and feeds it out.
7. Exit from the HEX dump mode by switching the printer OFF.
8. Switch the power ON again to resume normal on-line operation.

The printer control board SWC-492 is equipped with a 10-pole ribbon-cable type connector. The printer can be connected to a standard D-sub 9-pole male connector through a straight ribbon cable (see Figure 3). The following table shows the pin assignment of the 10-pole connector:

10-pole conn.	9-pole D-sub	Signal name	Direction	Description
1	1			Not connected
2	6			Not connected
3	2	RXD	To printer	Receive data
4	7	RTS	From printer	Request to send
5	3	TXD	From printer	Transmit data
6	8	CTS	To printer	Clear to send
7	4	DTR	From printer	Data terminal ready
8	9			Not connected
9	5	GND		Ground
10				Not connected

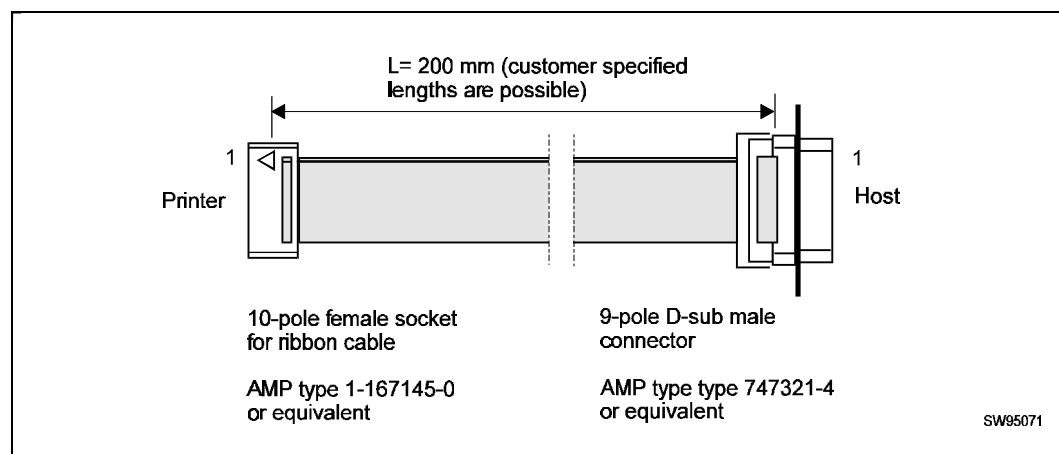


Figure 3. Serial interface adaptor cable (SWC00602-200)

The printer indicates that it is powered ON by setting DTR high. When initialized, RTS will be set high to indicate to the host computer that it is ready to receive data. RTS will be set low when the buffer is almost full, thereby telling the computer to stop sending data until RTS is pulled high.

The CTS circuit is ignored by the printer and can be left unconnected.

The following table shows alternative ways of designing an interface cable between the printer and a PC. The 9-pole D-sub-connector on the printers side is the connector on the optional serial interface adaptor cable SWC00602-200.

Printer			PC		
10-p. ribbon.	9-p. D-sub	Circuit	Circuit	25-p. D-sub	9-p. D-sub
3	2	RXD	TXD	2	3
5	3	TXD	RXD	3	2
4	7	RTS	CTS	5	8
7	4	DTR	DSR	6	6
9	5	GND	GND	7	5

Operating the printer through a parallel interface requires that the parallel interface piggyback board SWC-561 is mounted on top of the control board SWC-492.

The parallel interface board has a 40-pole ribbon cable type connector. The printer can be connected to a standard Centronics 36-pole connector using a straight ribbon cable such as the adaptor cable SWC00601 (see Figure 4). The following table shows the pin assignment in the 40-pole connector:

(The table continues on the next page)

40-pole conn.	Centronics	Signal	Direction	Description
1	1	STROBE	To printer	Strobe signal
3	2	D0	To printer	Data bit 0
5	3	D1	To printer	Data bit 1
7	4	D2	To printer	Data bit 2
9	5	D3	To printer	Data bit 3
11	6	D4	To printer	Data bit 4
13	7	D5	To printer	Data bit 5
15	8	D6	To printer	Data bit 6
17	9	D7	To printer	Data bit 7
19	10	ACK	From printer	Acknowledge signal
21	11	BUSY	From printer	Busy signal
23	12	Paper out	From printer	Paper out signal
25	13	Select	From printer	Selected (on line)
26	31	Init	To printer	Printer initialization
27	14	Autofeed	To printer	Not used in this printer
28	32	ERROR	From printer	Error signal
35	18	+5V	From printer	+5V through 47 kohm
36	36	Select In	To printer	Not used in this printer
2	19	GND		
4	20	GND		
6	21	GND		
8	22	GND		
10	23	GND		
12	24	GND		
14	25	GND		

40-pole conn.	Centronics	Signal	Direction	Description
16	26	GND		
18	27	GND		
20	28	GND		
22	29	GND		
24	30	GND		
30	33	GND		
31	16	GND		
33	17	Frame GND		
29	15			Not connected
32	34			Not connected
34	35			Not connected
37				Not connected
38				Not connected
39				Not connected
40				Not connected

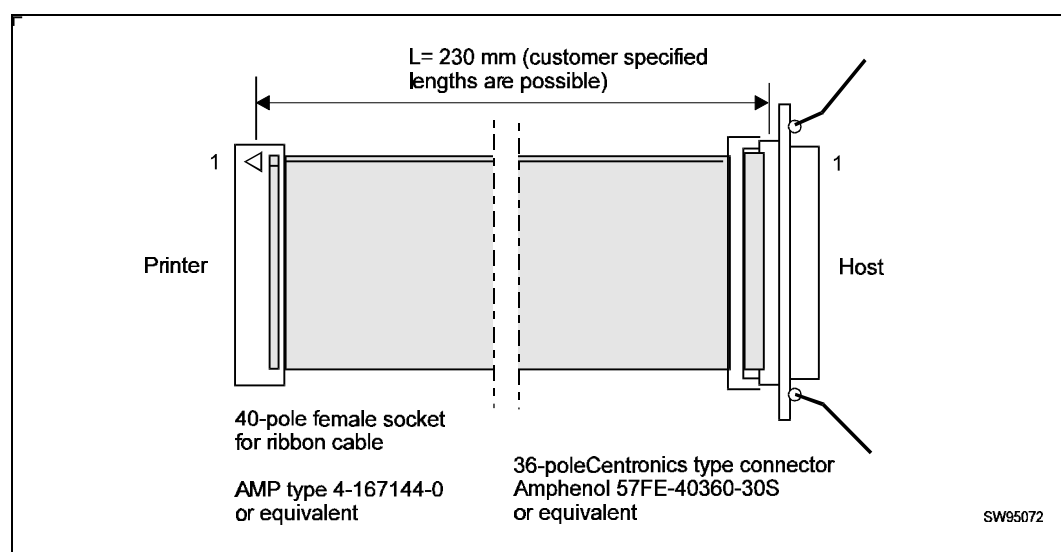


Figure 4. Parallel interface cable (SWC00601-400)

The supplied MS-DOS Windows driver SWC5000.DRV (version 1.1) supports all printers with parallel interface in the TTP 5000 series. This driver gives the possibility to use the TTP 5000 printer as an output device for any Windows program, but with a number of restrictions on printout quality etc., in comparison with common printers such as laser printers.

The driver is distributed on a 3½" diskette containing two files:

- SWC5000.DRV, the actual driver file
- SWC5000.WRI, a brief installation instruction (almost the same as the description below)

NOTE! *The version of the firmware PROM (U3) on the control board must be 4.93 or higher. See Section 8.1 on how to print the firmware PROM version.*

11.1

Installation

Use the following procedure to install the printer driver:

1. Insert the distribution disk into drive **A:**.
2. Open the Windows **Control Panel** and select the **Printer** icon.
3. Select the **Add Printer** box.
4. Select **Install**.
5. Select **OK**.
6. You will now see a list of the printer drivers supplied on the disk. Select **SWC5000** and press **OK**.
7. Select printer functions and parameters according to Section 11.2.
8. Check that the printer is connected to LTP1 or LTP2. This is important since the SWC5000 driver only works correctly when the printer is connected to the parallel port.

The driver is now installed and ready to be used together with your standard Windows applications.

IMPORTANT NOTES!

The TTP5000 is a high-speed printer. In order to obtain the best possible performance, it is absolutely necessary to setup the Windows Print Manager to use the highest priority. Please consult your Windows documentation for details.

If the SWC5000 Windows driver installation is unsuccessful, and the PC asks for "UNIDRV.DLL", install this file by making an installation of a standard printer from the available Windows printer driver assortment, for example, Epson FX.

11.2 Printer set-up

The TTP 5000 Windows driver can be configured to different mechanism widths, to different paper sensitivities, etc. The following is a list of the currently defined alternatives that you will find by selecting the Windows Program Manager — Control Panel — Printer — SWECOIN 5000 — etc.

11.2.1 Resolution

The resolution is fixed at 200 dots per inch (actually 8 dots per mm)

11.2.2 Paper size

The print with should be set based on the TTP 5000 printer version (60 / 80 / 112 mm) that is to be used.

Paper width	Select print width
60 mm	56 mm
80 mm	72 mm
112 mm	104 mm

11.2.3 Paper source

Roll paper

This alternative makes the printer start the printing at the current paper position. The top-of-page margin is therefore approximately 20 mm.

Roll paper with reverse before print

Causes the printer to reverse before starting to print. This reduces the top-of-page margin to approximately 4 mm. This function may cause excessive printhead wear.

11.2.4 Orientation

Portrait

Printing across the paper path (latitudinal).

Landscape

Printing along the paper path (longitudinal)

11.2.5 Raster

No raster

Coarse

Fine

Line

11.2.6 Intensity control

Continuous adjustment with a slide bar.

11.2.7

Paper quality

This option enables the use of different types of thermal paper.

The printer driver will send a command to the printer according to the following table. Please consult Section 2.1 for further information.

Standard sensitivity	Sends an <ESC> + q + 5
Low sensitivity	Sends an <ESC> + q + 10
Very low sensitivity	Sends an <ESC> + q + 15
High sensitivity	Sends an <ESC> + q + 2

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User Registration Form

SWC-00761-A

After you have returned this registration form to us we will keep you informed of product changes, manual updates, etc. through our bulletin service. Do not return this form if you already have registered a previous edition of this manual.

You may also use this form to inform us about changed registration data (name, address, phone No., etc.), but please tick the *Changed information* box in that case.

☐ New registration ☐ Changed information

Name

Organization

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Zip / Postal code

City

State

Country

Telephone

Fax

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